

345 P 363

Patent Claims:

- 5 1. Radio frequency diplexer having two or more resonators, with the following features:
- at least three connections (21, 22, 23) are provided, via which a common signal path (A), a transmitting device (T) and a receiving device (R)
 - 10 can be connected,
 - one or more resonators (R41, R41') are provided and are associated solely with the transmission path, with one resonator (R41) in the transmission path being provided with an input (31) for feeding in the transmission signals,
 - 15
 - having one or more resonators (R43, R43') which are associated solely with the reception path, with one resonator (R43) being provided with an output device (33) in order to output the received signals at the associated connection (23), and
 - 20
 - having at least two additional resonators (R42, R42') with at least one resonator (R42) of the at least two further resonators (R42') being provided with an input/output for feeding signals from a common signal path (A) and for outputting signals to a common signal path (A),
 - 25

characterized by the following further features:

- in addition to the resonators (R41, R41'; R43, R43') which are associated either with the transmission path or with the reception path, at least two additional resonators (R42, R42') are also provided,
- 30
- the at least two additionally provided resonators (R42, R42') form an interconnection resonator pair (R42, R42') which are strongly coupled to one another, and
- 35
- both the transmission path and the reception path are coupled to the at least one further resonator (R42'), which is provided in addition to the

resonator (R42) for inputting to/outputting from the common signal path (A).

2. Radio frequency diplexer according to the
5 precharacterising clause of Claim 1, **characterized by** the following further features:

- in addition to the resonators (R41, R41'; R43, R43') which are associated either with the transmission path or with the reception path, at least two additional resonators (R42, R42') are also provided,
- the at least two additionally provided resonators (R42, R42') form an interconnection resonator pair (R42, R42') which are strongly coupled to one another, and
- both the transmission path and the reception path are coupled to the first resonator (R42) which is provided for inputting to/outputting from the common signal path (A).

20 3. Radio frequency diplexer according to one of Claims 1 or 2, **characterized** in that the distance between the axes of the inner conductors (42, 42'a) of the interconnection resonator pair (R42, R42') is less than the distance between two further resonators which are located alongside one another on the respective signal path.

30 4. Radio frequency diplexer according to one of Claims 1 or 3, **characterized** in that the radio frequency diplexer has a total of $2n$ resonators, where "n" is an natural odd integer, with the resonators preferably being arranged in two rows of n resonators each.

35 5. Radio frequency diplexer according to one of Claims 1, 3 or 4, **characterized** in that the three connecting sockets (21, 22, 23) which are provided are fitted on the same side (19) of the apparatus housing

or filter housing (11), for connection of a common signal path (A), of a transmitter (T) and of a receiver (R).

5 6. Radio frequency diplexer according to one of Claims 1 to 5, **characterized** in that at least one resonator, preferably two or more resonators, or preferably all of the resonators, has or have a coaxial configuration.

10

7. Radio frequency diplexer according to one of Claims 1 to 6, **characterized** in that at least one resonator, preferably two or more resonators, or preferably all of the resonators, is or are in the form

15 of dielectric resonators.

8. Radio frequency diplexer according to one of Claim 7, **characterized** in that at least one resonator, preferably two or more resonators, or preferably all of the resonators, is or are in the form of ceramic resonators.

9. Radio frequency diplexer according to one of Claims 1 to 5, **characterized** in that at least one resonator, preferably two or more resonators, or preferably all of the resonators, is or are in the form 20 25 of a stripline.